REMARKS

The Official Action mailed August 19. 2008, has been received and its contents carefully noted. Filed concurrently herewith is a *Request for One Month Extension of Time*, which extends the shortened statutory period for response to December 19, 2008. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on May 12, 2006; and July 9, 2008.

Claims 1-7 were pending in the present application prior to the above amendment. The features of claim 5 have been incorporated into independent claims 1 and 2, and new claims 11-14 have been added to recite additional protection to which the Applicant is entitled. Accordingly, claims 1-4, 6 and 11-14 are now pending in the present application, of which claims 1 and 2 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

The Official Action rejects claims 1-4 and 6 as anticipated by U.S. Publication No. 2004/0169023 to Tanaka. The Official Action rejects claims 1-4 and 6 as obvious based on the combination of JP 2001-308344 to Yamazaki and U.S. Publication No. 2003/0085720 to Yamazaki. The Official Action rejects claim 7 as obvious based on the combination Yamazaki '344 and Yamazaki '720. In response, the features of claim 5 have been incorporated into independent claims 1 and 2. Therefore, the above-referenced rejections are now moot.

The Official Action rejects claim 5 (now incorporated into independent claims 1 and 2) as obvious based on the combination of Yamazaki '344 and Yamazaki '720. The Applicant respectfully traverses the rejection because the Official Action has not made a *prima facie* case of obviousness.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some reason, either in the references themselves or in the knowledge generally available to one of ordinary

skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some reason to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims. Independent claims 1 and 2 recite that a laser beam having a fundamental wave is oscillated with a pulse width of 1 femtosecond or more and 10 picoseconds or less. For the reasons provided below, Yamazaki '344 and Yamazaki '720, either alone or in combination, do not teach or suggest the above-referenced features of the present invention.

The Official Action concedes that "Semiconductor Energy Laboratory [Yamazaki '344] and Yamazaki ['720] disclose the claimed invention except for the fundamental wave is operated with a pulse width of 1 femtoseconds or more and 10 picoseconds or less" (page 4, Paper No. 20080815). Without any specific references to Yamazaki '344 and Yamazaki '720 in support and without statements which establish the level of ordinary skill in the art at the time of the present invention, the Official Action asserts that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the fundamental wave with a pulse width of 1 femtoseconds or more and 10 picoseconds or less, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum

or working range involves only routine skill in the art" (Id.). The Applicant respectfully disagrees and traverses the assertions in the Official Action.

The present inventors recognize that a fundamental wave with a wavelength of about 1 μm is not absorbed so much by a semiconductor wafer in irradiating the semiconductor wafer with the fundamental wave. Thus, the fundamental wave has a low absorption efficiency. The present inventors have found that a fundamental wave emitted from a pulsed laser having a pulse width on the order of picoseconds, or on the order of femtoseconds (10-15 seconds) can provide high intensity laser light (page 4, line 20, to page 5, line 19). It is noted that "high intensity" means the peak output power of laser light in the present invention ranges from $1GW/cm^2$ to $1TW/cm^2$ (page 4, lines 20-22), which is explicitly claimed in new dependent claims 11 and 12. Thus, a non linear optical effect (multiphoton absorption) is generated and the fundamental wave can be absorbed by the semiconductor wafer (page 4, lines 28-30).

The Official Action has failed to demonstrate that Yamazaki '344 and Yamazaki '720 teach or suggest the general conditions of the present invention as recited in the independent claims and described, for example, in paragraphs 20 and 21. Specifically, the Applicant respectfully submits that the Official Action fails to demonstrate why, based on the disclosures of Yamazaki '344 and Yamazaki '720, one of ordinary skill in the art at the time of the present invention would have had a reason to oscillate a fundamental wave at a pulse width of 1 femtosecond or more and 10 picoseconds or less when selectively injecting impurities, processing a laser beam, and moving the surface of the impurity region as presently claimed. In other words, the Official Action does not demonstrate that a pulse width of a fundamental wave was critical or advantageous in the claimed method, much less that such pulse width could or should be within the claimed range. Since the Official Action has failed to demonstrate these general conditions, discovering the optimum or working range for such method involves more than just routine skill in the art and would not have been obvious to one of ordinary skill in the art at the time of the present invention.

Therefore, the Applicant respectfully submits that Yamazaki '344 and Yamazaki '720, either alone or in combination, do not teach or suggest that a laser beam having a fundamental wave is oscillated with a pulse width of 1 femtosecond or more and 10 picoseconds or less.

Since Yamazaki '344 and Yamazaki '720 do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

New dependent claims 11-14 have been added to recite additional protection to which the Applicant is entitled. Specifically, claims 11 and 12 recite "a peak output power of the laser beam is 1GW/cm^2 to 1TW/cm^2," which is supported in the present specification, for example, by paragraph 20, and claims 13 and 14 recite "a wavelength band of the fundamental wave is from red ray to near-infrared ray," which is supported in the present specification, for example, by paragraph 15. The Applicant respectfully submits that new claims 11-14 are in condition for allowance.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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